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AUTHOR Olmsted, Pat
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ABSTRACT

This paper reviews 25 selected studies of parent teaching strategies. The studies selected for review were major studies in the subject area which: (1) involved direct observation of parent-child interactions (parents interacting with their own children) in a structured situation; and (2) employed an unusual method to study parental teaching strategies and/or examined a unique set of teaching behaviors. Age range of the children was generally 3-9 years. Each study is examined separately and the results are presented and discussed. The paper concludes with a summary and discussion of the results of all the studies. (MS)

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Parental Teaching Strategies: A Review of Selected Observational Studies

Pat Olmsted
Associate in Education
Institute for Development of Human Resources
College of Education
University of Florida
Gainesville, Florida 32611*

The study of parental teaching behaviors with children ages three to nine using direct observation was begun in the mid-1960's. Although direct observation of parental socialization behaviors in an unstructured situation was done as early as the 1940's (Merrill, 1946), studies focusing on parental teaching behaviors in a structured situation didn't appear in the literature until much later. In the 1960's there were 9 studies of this type, while 48 more have been conducted during the first two-thirds of the 1970's. Because of the large number of studies which has been undertaken on this topic there is a need to look for common sets of results and begin to form an overall picture of the area. In this paper 25 selected studies in the area will be discussed followed by a compilation of their diverse results.

The rapid growth in this field of research is mainly due to two factors. First, during the last ten or fifteen years there has been increased interest in the home as a learning environment, particularly during the child's early years. This interest has included both the physical home environment and parental teaching behaviors. Second, there has been a shift from using interview procedures to using observational procedures for studies in this area. As the problems with interview procedures were discussed in the literature (e.g., Yarrow, 1963), the number of studies using interview procedures has decreased while the number using observation procedures has increased.

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The set of studies to be included in this review has been chosen from those involving direct observations of parent-child interactions in a structured situation, and the focus of the review is parental teaching behaviors. Only studies in which the parent is observed with his/her own child are included. The age range of the children in this set of studies is generally three to nine years of age. The particular studies to be discussed were selected because they were major studies in the area, they used an unusual method to study parental teaching strategies and/or they examined a unique set of teaching behaviors.

Before beginning the actual review three issues need to be mentioned. First, caution must be used when comparisons are made among studies. The nature of the situation, the effect of the instructions to the parent and/or child, the presence of the observer, etc., can each have an impact on the findings of a particular study. Differences in the results of two studies may be due to one or more of these things. This paper will not deal extensively with the methodological problems in this area, but will consider them as the need arises. For more information on the methodological problems in this area and how these problems affect the results see Yarrow (1963), and Bell (1964), Lytton (1971) and Cox (1975).

A second issue to be considered concerns the direction of the effects in studies in this area. The earlier studies on parental teaching behavior used predominantly correlational data analysis procedures. In some of these studies the leap was then made to infer the direction of the effect, basically that the parental behavior influences the child behavior. This direction may indeed be true, but it cannot be inferred from a correlation. In the more recent studies researchers have become both more aware of and more sophisticated in dealing with this problem. More sophisticated designs and

more sophisticated data analysis procedures have been used to handle the problem. Bell (1968) presents a good statement of this problem.

One last issue which needs to be mentioned concerns the background and orientation of most of the researchers in this area. Observational studies of parental teaching strategies have been conducted almost exclusively by white, middle-class investigators. While there is no conclusive evidence that the ethnic and social class characteristics of the investigators have directly affected the results, it is quite possible that there have been indirect effects. The tasks selected may have different meanings to parents of different social classes or ethnic groups. The presence of the observer (often white, middle-class) may have different impacts on the various groups of parents. Finally, the categories selected for observation, particularly those dealing with verbal behavior, may be biased by the investigator's orientation. The reader is referred to Baratz and Baratz (1970), Sroufe (1970) and Bee, Streissguth, Van Egeren, Leckie and Nyman (1970) for further reading on this topic.

Organization of the studies.

To serve as an outline for this paper the chart shown in Table 1 has been developed. In this chart the various activities are listed with the studies for each activity divided into the three major observation techniques utilized.

Insert Table 1 about here

Sorting tasks have been the most frequently used activity in studies in this area. Block-sorting by descriptive attributes (height, color, etc.)

has been most common, with toy-sorting and cloth-sorting also used. All three observation techniques have been utilized with sorting tasks. Puzzle construction has been the activity for two sets of studies, one using event sampling and one using time unit observation techniques.

A series of studies conducted at the Demonstration and Research Center for Early Education (DARCEE) employed the Maternal Teaching Style Instrument (MTSI) while two different sets of investigators have used building tasks. Two studies have focused on parental teaching behavior while reading a book. The final four activities have each been utilized in one study.

Numerous ways of categorizing observation techniques can be found in the literature (e.g., Boyer, Simon and Karafin, 1973; Gordon and Jester, 1971; Wright, 1960; Collier, Note 1). However, none of the systems seemed suitable, so a new set of categories was developed from sections of the other systems.

Event sampling, a category from Wright (1960), refers to the recording of specific behavioral incidents. Generally, a set of categories containing behaviors in which the investigator is interested is developed beforehand. Then, during the observation frequency counts or tallies are made for the various categories. No recording is done of events not included in the initial set of categories.

Event unit and time unit are parallel categories. In the former, statements are units and each one is coded into a set of categories. In the latter, a time span is a unit and events occurring during that time span are coded into one of a set of categories. An alternative form of time unit coding includes coding either every time unit (e.g., 5 seconds) or every category change, whichever is shorter. The time unit observation procedure is described in Simon, Boyer, and Karafin, while the event unit procedure is an adaptation of the time unit technique.

Examination of Table 1 shows that approximately 70% of the studies used event sampling procedures. The category of event unit is next largest with 20% of the studies, while only about 10% of the studies fall into the time unit category. Some studies used more than one type of activity or observation procedure. When this occurred, the task or observation procedure used most extensively, or on which the majority of the data analysis was done, was used for placement in the table.

Structured Activities

Sorting Tasks

One of the landmark studies of parent-child interaction using direct observation was done by Hess, Shipman, Brophy and Bear (Hess, Shipman, Brophy and Bear, Note 2; Note 3). In this giant study a large variety of situations and observation techniques was utilized. The study involved 163 black mother-child dyads from a large urban community. Four different social class levels were studied ranging from families at the welfare level to families at the professional level. Although a variety of data collection procedures were utilized, the ones of immediate interest include three different structured situations; toy-sort, block-sort and etch-a-sketch. In each of these situations the mother was asked to teach her four-year-old child specific activities. Live observations and audiotape recordings were done for each type of activity.

Twelve maternal teaching variables were developed from the block-sorting task and were related to two types of child variables; (1) process: referring to child behaviors during the task, and (2) product: referring to task performance scores and IQ scores. A listing of the maternal teaching variables along with the number of significant correlations (.05 level)

found between each of these variables and the child variables is presented in Table 2. As can be seen in the table, most of the maternal teaching

Insert Table 2 about here

variables correlated significantly with several child process variables, indicating a significant relationship between maternal teaching behavior and child task behavior when measures of both are taken in the same situation. Significant correlations were also found between the majority of maternal teaching variables and the child product variables.

In the follow-up study the correlations between maternal teaching variables and measures of later school achievement were examined. Significant correlations found between these two sets of measures are presented in Table 3. All but one of the maternal teaching behaviors showed a

Insert Table 3 about here

significant relationship with the three different measures of later academic performance.

Further examination of the data from the project just discussed was done by Brophy (1970). He reanalyzed the data to further examine pre-response and post-response teaching behaviors of mothers from the various social classes. He found that middle-class mothers did much more pre-response behaving (labelled proactive) than did lower-class mothers. The groups of mothers differed much less in terms of their post-response behavior (labelled reactive). Brophy called for more investigations focusing on these aspects of teaching, and their relationship to child learning.

Olmsted and Jester modified the Hess et al block-sort task to make it more suitable for use with children ages five to eight (Olmsted and Jester, 1972; Olmsted, 1973). The procedures developed by Hess et al were accordingly adapted to fit the new task. Two groups of parent-child dyads comprised the sample, 39 middle-class and 32 lower-class dyads. Observation procedures included a checklist for live observation adapted from Hess et al and verbal interaction coding of audiotapes. No reliable differences in parental teaching style occurred as a function of the age or sex of the children. (Hess et al found a very small number of differences in teaching behavior related to sex of child from the large number of variables examined.) Marked differences in the teaching styles of parents as a function of social class were found. The twelve maternal variables examined were: use of introductory statement, detail of introduction, number of groups made during teaching, types of corrections, types of control strategies, total time taken, percent of time mother talked, variety of mother talk, percent of closed questions, percent of open questions, use of praise and use of correction. Significant social class differences were found for every variable except percent of open questions which was very low in both groups. Due to procedural difficulties it was not possible to examine the relationship between maternal teaching behavior and child performance.

An examination of the relationship between parental teaching behavior on the Olmsted and Jester adaptation of the block-sort and child performance was done by Santin and Garber in Toronto (Santin and Garber, 1975). The Peabody Picture Vocabulary Test (PPVT) was administered to the children in the study. The sample consisted of 33 parent-child dyads from low-income housing projects with the children ranging in age from 53 to 76 months. No differences in teaching style were found as a function of age of the child. This finding is in agreement with Olmsted and Jester and also is

not surprising considering the narrow range of ages in the sample. Essentially no teaching style differences were found relating to the sex of the child.

Using multivariate data analysis procedures, 19 parental teaching variables were related simultaneously to the PPVT scores. These 19 included most of the ones examined by Olmsted and Jester plus the following: directive and non-directive teaching strategies, specific and non-specific directions and two measures of child participation. A group of 5 of the 19 variables was found to be significantly related to child PPVT scores. The five included use of introductory statement, detail of introduction, use of open questions, non-directive teaching strategies and amount of praising. Some of these variables are similar to those found to be related to child performance by Hess et al. The results of this study need to be interpreted with caution, however, due to statistical problems relating to the large number of variables and the small number of subjects.

Three studies will be discussed which used the block-sorting task with event unit procedures. Wiegerink and Weikart (1967) conducted a study with 21 mother-child dyads including both middle-class and lower-class samples. The authors' main interest was the suitability of the task as a setting for the observation of parent-child interaction, with a secondary interest in differences in teaching style as they related to social class. After examining their data the investigators concluded "that the Eight-Block Test is a technique which is a useful and discriminating method for studying mother-child interactions" (p. 334). The 21 dyads were divided into three separate but overlapping groups for specific analysis of the data; (1) completely successful and completely unsuccessful mothers, (2) elementary school teachers, and (3) mothers who had participated in Weikart's Perry Preschool Project. For the data analysis each mother's

verbalizations were divided into units and coded into one of seven categories; specific information, general information, positive feedback, negative feedback, specific verbal requests, general verbal requests and physical requests. Distinct social class differences were found, with the middle-class parents (including elementary school teachers) relying more on positive feedback, specific verbal requests and general verbal requests. Lower-class parents relied more on information giving and negative feedback. The mothers who had participated in the Perry Preschool Program, although they were all low-income, taught in a style intermediate between that of the lower-class non-Perry Preschool mothers and that the middle-income mothers.

Wiegerink (1969) also used the eight-block task in his dissertation. He actually used several different measures, but only the block-sort will be considered here since the assessment of maternal teaching behavior was taken solely from this situation. Sixty mothers and their four-year-old children comprised the sample, with the sample being equally divided among the following three categories: (1) economically advantaged, (2) economically disadvantaged with average IQ child, and (3) economically disadvantaged with retarded child.

The mother's block-sorting behaviors were divided into units and each unit was coded into one of six categories. As in most event unit studies the raw scores were converted to percentages to equate for unequal total number of units. A single rating was also assigned to each mother which represented the "expansiveness" of her teaching. This rating was developed by assigning positive or negative scores to each of the six categories and summing across all behaviors. A high value indicated an "expansive" teaching style while a low value indicated a "restrictive" teaching style. The six behavior categories are listed in Table 4 along with a summary of the results for the total group.

Insert Table 4 about here

Significant F's were found among the three groups for all seven variables (six categories and single rating). Post-hoc analyses indicated that the advantaged group differed from the two disadvantaged groups on six of the seven measures (verbal request results were nonsignificant), while the two disadvantaged groups differed on five of the seven measures (general information and positive feedback results were nonsignificant). No significant relationships were found between teaching style and either sex of child or ethnic group. The relationship between maternal teaching style and child performance was examined by correlating the seven teaching variables with four child measures, Stanford-Binet IQ, PPVT, block-task verbal test score and block-task performance test score. As can be seen in Table 4, 19 of the 28 correlations were significant at the .05 level. Since the maternal variables are intercorrelated as are the child variables one has to interpret these findings with some caution. However, there seems to be sufficient evidence to support the existence of a relationship between maternal teaching style and child behavior.

The final study in this cell of Table 1 is the investigation reported by Falender and Heber (1975) in which the purpose was "to evaluate the interactions between children who had participated in a developmental intervention program outside the home and their mothers, in comparison to interactions between mothers and children in the control group" (p. 831). In this intervention program the experimental children are given daily intensive language and cognitive stimulation from the time they are six months old until they enter first grade. This program occurs outside the home with the training being done only with the child and not the parent.

The experimental group mothers did receive training in academic skills and vocational rehabilitation, but not in teaching skills. In the control group, the families received no treatment, but the children were tested at the same times as the experimental group children. All families in both groups were low socioeconomic status high-risk Black residents in a high density inner-city area. The particular study to be reported occurred when the children were approximately 4 and 5 years old.

Two tasks were used; the Hess et al, block sorting task which was conducted the usual way with only the mother receiving the instructions, and the etch-a-sketch task in which both the mother and child received the instructions. It was predicted that the experimental children would behave differently depending upon whether or not they had been given the instructions. Differences were also predicted in the behaviors of the mothers in the two groups even though the intervention had occurred with the children. The behaviors of the mother and child were divided into units and coded into the following six categories: verbal information processing, verbal positive feedback, verbal negative feedback, physical information processing, physical positive feedback and physical negative feedback.

The results indicated that the experimental child (but not the control child) became the director of the interaction in both situations, with he/she obtaining the instructions from his/her mother by questioning when not receiving the instructions directly. The behavior of the two groups of children differed significantly on all six categories for the sorting task and on the first four of the six categories on the etch-a-sketch task. The differences indicated that the experimental group had a more verbal and positive style of interaction. No differences were found between the two groups of mothers on the block-sorting task. The behavior of the two groups of mothers did differ significantly, however on the last 4 of the 6 measures examined in the etch-a-sketch task. The authors explore the

The implications of these results as they relate to the two types of tasks and to the particular intervention program used. One conclusion they reach is that "the changes induced in the child by extrafamilial stimulation do have the additional result of inducing changes in the mother's behavior in her interaction with her child," (p. 835).

The final two studies in this review using a sorting task were time unit cross-cultural studies conducted by Steward and Steward (1973, 1975). In the first study parents and their three-year-old sons from seven ethnic groups were observed interacting in two situations, a cloth-sorting task and a beanbag toss game. Two Anglo-American groups (lower-class and middle-class), three Mexican-American groups (Spanish-speaking, English-speaking and bilingual) and two Chinese-American groups (Chinese-speaking and English-speaking) were included in the study. Each group consisted of six mother-child dyads. The interaction sessions were videotaped and coding was done by persons from the same ethnic group as the subjects. Twenty second intervals were used for coding and a variety of behaviors for both the mother and child were coded. Variables selected for analysis were of two types, programmatic and loop. A complete listing of these variables is given in Table 5.

Insert Table 5 about here

The findings of this study are too complex to present in detail. Rather, an overview of their findings will be given. Ethnic differences in teaching style were very evident in the data. The Anglo-American mothers generally "spent time in careful setup, gave a rich embroidery of the adult instructions and used feedback directed in the form of information about the child's performance" (p. 336). The Chinese-American mothers "were

distinctive in their selective use of specificity of instructions and in providing a high proportion of enthusiastic positive feedback" (p. 336). Mexican-American mothers "presented the fewest number of teaching loops, and exhibited slower pacing by taking more time to complete the loops." (p. 336). Even though the sample size within each group was small, 15 of 17 maternal variables examined resulted in significant overall F values among the groups. The two variables yielding nonsignificant results were: (1) total time, and (2) format strategy combined. Differences among the various subgroups of the three ethnic groups are varied and are reported in the article.

In their second study the Stewards compared the teaching styles of mothers when they taught their own child, when they taught a child of similar background and when they taught a child from a different ethnic and social class background. Twenty mothers equally divided into Anglo-American and Mexican-American groups as well as middle-class and lower-class groups each taught two tasks to three different three-year-old boys. The cloth-sorting task and the beanbag toss game were again used. The administration, coding categories and coding procedures were the same as those used in the earlier study.

The variable of social distance was investigated in this study, with social distance being defined as the amount of similarity between the adult and child. For the 17 maternal variables analyzed, 8 had one or more significant interactions. Because of these multiple significant interactions, the results are extremely complex and cannot be presented in detail. The mothers seemed to have some teaching behaviors which remained stable across social distance such as the number and pacing of teaching loops and amount of elaboration of instructions. Other behaviors such as number of questions asked and specificity of instructions changed with changes in social distance. Not surprisingly, mothers were 'nicer' to other children than they were to their own (more positive and less negative reinforcement

The results of this particular study have implications for several situations: (1) classrooms in which the teacher and children are of different ethnic and/or social class backgrounds, (2) programs in which parents differing from the teacher and/or children in demographic characteristics work in the classrooms, and (3) home visit programs in which the home visitor and family differ in one or more characteristics. The Stewards have only studied Anglo-Americans and Mexican-Americans and the interactions between the two ethnic groups. There is a need for similar studies with other ethnic groups.

Puzzles

Puzzles have been the task selected by two different investigators, one conducting a series of cross-nationality studies using event sampling (Feshbach, 1973; Feshbach, Note 4), and one using time unit observation procedures (Osofsky and O'Connell, 1972; Osofsky and Oldfield, 1971).

In the former set of studies Feshbach examined the reinforcement styles of mothers and their four-year-olds in three different countries; United States, Israel and England. In each study the author sought to examine relationships between reinforcements used by the mothers and those used by the child in a teaching situation. In each study the first phase involved the four-year-old teaching a puzzle to a three-year-old. About an hour later the mother was asked to teach her own four-year-old a similar but more complex puzzle. The same categories for reinforcements were used during each setting.

In the American study, 109 mother-child pairs were studied, being approximately evenly distributed between lower-class and middle-class, and between Black and white ethnic groups. The findings indicated that "In general, middle-class white children and their mothers used relatively more positive than negative reinforcement, lower-class Black children and

their mothers used more negative than positive reinforcement, with the other two groups falling between these two extremes." (1973, p. 98).

When the relationship between the mother's and child's use of reinforcement was examined, small but significant correlations were found for the total sample for use of both positive and negative reinforcements. Feshbach, however, feels these correlations are not interpretable due to the social class and ethnic differences in use of reinforcements. When similar correlations were computed within social class and ethnic groups, the resulting values were all small and seven out of eight were nonsignificant (exact values were not reported in the paper). Since the sample sizes of these separate groups are much smaller, however, a higher correlation value would be needed to reach significance than that needed for the total population.

The Israeli sample consisted of 60 mother-child pairs, equally divided into two social classes and containing equal numbers of boys and girls. The same procedures developed for the American study were followed in this study. Although the effects of sex of child had not been considered in the earlier study, they were examined in the Israeli study, along with social class effects.

Feshbach found that middle-class mothers used significantly more positive and significantly less negative reinforcements than did lower-class mothers. Differences relating to the sex of the child were found in the use of negative reinforcement. Lower-class mothers used significantly more negative reinforcement when teaching their sons than did middle-class mothers. As in the American study, correlations between the mother's and the child's use of positive and negative reinforcements were generally small and nonsignificant.

The final study was conducted in England where the sample consisted of 50 middle-class and lower-class white mothers and children. Social

class and sex of child were examined in relation to use of reinforcement. There were no differences in the use of negative r inforcement between the middle-class and lower-class mothers. This finding differs from those for the other two cultures. Concerning the use of positive reinforcements, the two groups of mothers did not differ when instructing their daughters, but when teaching their sons, the middle-class mothers used significantly more than the lower-class mothers. None of the correlations between the mother's and child's use of positive and negative reinforcement was found to be significant.

Feshbach then examined the differences in reinforcement patterns among the various nationalities and among the various ethnic groups. The mean frequencies of positive and negative reinforcement for all groups of mothers is presented in Table 6.

Insert Table 6 about here

When the mean frequencies of positive reinforcements are examined, only minor differences are seen among the three middle-class groups as well as among the three lower-class groups. For negative reinforcements the picture is quite different; lower-class Black American mothers used much more negative reinforcement than any other group, and the two Israeli groups showed relatively high use compared to the remaining groups.

Further cross-nationality comparison was done on the pattern of reinforcement which consisted of the proportion of positive reinforcement relative to total reinforcements. This measure provides an index of the pattern of reinforcement as well as controlling for differences in the absolute number of reinforcements. The results of the two analyses, one for mothers and a comparable one for children were as follows: "For

each analysis, a significant main effect was obtained for social class, the middle-class samples displaying consistently higher proportions of positive reinforcement than lower-class samples. Analyses of the mother data reflected significant social class differences for each of the three countries." (1973, p. 106).

The last study utilizing puzzles as the parent-child activity was done by Osofsky and her associates (Osofsky & O'Connell, 1972; Osofsky & Oldfield, 1971). This study is one of the few which has examined the effects of child behavior upon parental behavior. Forty-one five-year-old girls were observed interacting in two situations, one with the mother and one with the father. All subjects were from white, middle-class families. Both easy and hard puzzles were used as task materials to allow for the study of parental reaction to independent and dependent child behaviors. The experimenter and child left the room to get the puzzles and for the easy ones the child was told she could probably do it by herself, while for the difficult ones she was told she would probably need help from her parents. Different puzzles were used for each of the two parents. Parental behavior and child behavior were both coded every fifteen seconds from videotapes made of the interaction sessions.

The authors state "The results indicated that the children's behavior had an effect upon the parents, with mothers and fathers interacting more and being more controlling when the children were dependent....mothers more often encouraged the child's efforts while fathers were more likely to help them with the task" (1972, p. 157). Differential instructional behavior for mothers and fathers may be an area of research which should be more fully explored due to the increased involvement of fathers in child rearing during the past few years.

Maternal Teaching Style Instrument (MTSI)

The MTSI has been used in a series of event sampling studies conducted

at the Demonstration and Research Center for Early Education (DARCEE) (Sandler, Dokecki, Stewart, Britton & Horton, 1975; Barbrack, Note 4; Benson & Sandler, Note 5; Sandler, Stewart & Barbrack, Note 6; Sandler, Stewart & Dokecki, Note 7). The task consists of 10 cards containing pictures of geometric forms. A set of rubber geometric forms matching the ones pictured accompanies each card. Generally the mother was given a card with various geometric forms pictured in certain positions while the child was given a card with some or all of the geometric form pictures missing. The task was for the child to add the rubber forms in such a way as to make his card look exactly like his mother's card. The mother could help the child in any way, except by showing him her card. The coding categories for the MFSI are listed in Table 7.

Insert Table 7 about here

Barbrack used both child measures and the MFSI to assess the effects of three home visiting strategies; mother-involved cognitive, child-centered cognitive and mother-involved physical training. The sample consisted of 90 Black families all of whom had a child entering first grade after having completed a summer Head Start program. Five comparable groups were used in the study, the three treatment groups and two control groups. When the groups were compared on the two child measures, Stanford-Binet and Metropolitan Achievement Test, the child-centered cognitive program was most effective. When the groups were compared on the MFSI, a different result was found. The mothers in the mother-involved cognitive group were statistically superior to all other groups in categories A-2, B-5, B-6 and C-1 from the list in Table 7. No report of a data analysis relating maternal teaching style to child measures could be found, but since this would have

had to have been done within each treatment group it is likely that the small sample sizes would have contributed to inconclusive results.

In 1971, Sandler et al, revised the MTSI. The new instrument consisted of one practice card and four task cards. Where the earlier version only considered maternal behaviors, the revised edition assessed both maternal and child behaviors. The revised maternal teaching variables are listed in Table 7. This revision was used by Sandler and his associates as one evaluaton measure in a home-visit program (Sandler et al., 1973). Fifteen low-income families, six experimental and nine control, constituted the sample. Male and female three-year-old children as well as both Black and white families were included in each group. Home visits were made for twelve weeks and involved working with both the mother and child. Even with the short duration of the program and the small sample sizes, the treatment mothers showed significantly greater changes in the predicted direction on 3 of the 16 variables examined. They used significantly more color cue labels, significantly more shape cue labels and significantly fewer inappropriate directions. Mothers in the treatment group were also higher (but not significantly so) on most positive, appropriate and cue label categories. Ethnic and sex differences in MTSI performance were examined in the study, but will not be discussed here due to the small sample sizes.

A study examining relationships between the MTSI and ethnicity and IQ of the child was undertaken in 1973 (Sandler et al., Note 10). A copy of the original report was not available but the findings of the study were summarized in Benson et al., (Note 8). Differences relating to ethnicity indicated that Black mothers used fewer color, shape and position cue labels, gave more negative feedback, gave more inappropriate information

and asked more inappropriate questions than did white mothers. Differences relating to IQ indicated that mothers of high IQ children used more cue lables, more positive feedback, more gestures, less negative feedback and less physical contact than did mothers of low IQ children. However, it was not indicated whether or not these findings were significant.

An alternate form of the MFSI was developed by Benson and Sandler (Note 8). Validation of this form was investigated by administering both the 1971 revision and the alternate form to 17 mother-child pairs differing in ethnicity and sex of child. Analysis of the data indicated that the two forms did not differ significantly in terms of the total number of responses in each category. Also, neither sex of the child nor ethnicity was found to be related to MFSI performance.

Building Tasks

House building (with blocks) and pyramid construction are the two specific activities which fit into this category. It is interesting to note that both of these studies utilized event unit observation procedures.

Bee and her associates at the University of Washington observed parent-child interaction in both a structured teaching situation and an unstructured situation (Bee, Van Egeren, Pytkowicz, Nyman and Leckie, 1969; Bee and Streissguth, 1973; Streissguth & Bee, 1972). Only the former part of the study will be discussed in this paper. Social class differences were explored in this study with a sample consisting of 76 lower-class mothers and 38 middle-class mothers, all with four-to five-year-old children. The lower-class sample contained both Black and white ethnic groups while the middle-class sample had only white families. Since the authors wished to study social class differences, it was necessary to 'control' for ethnic differences in the various data analyses. Their success in this matter was questioned by Sroufe (1970), but a satisfactory reponse to the criticisms was given

(Bee, Streissguth, Van Egeren, Leckie and Nyman, 1970). The instructional situation was a house building task. A model house was displayed, and then the child and mother were given an identical set of blocks to those used in the model and asked to copy the model. The mother was allowed to help as much of as little as she wished. The mother's teaching behavior was divided into units and then coded into one of several categories. The maternal categories used in the data anlaysis consisted of: question suggestions, nonquestion suggestions, positive feedback, negative feedback, nonverbal intrusion, low specificity, medium specificity and high specificity. The rate per minute for each of these measures was used along with the total time spent on the task. The results as summarized by the authors were stated as follows: "In the problem solving situation, the teaching strategies of middle-class mothers were characterized by the use of non-specific suggestions and the infrequent use of non-verbal help and negative feedback to the child. Lower-class mothers were more likely to intrude physically into the child's problem solving; they used relatively higher rates of negative feedback, and more specific, concrete suggestions to their children than did middle-class mothers" (1969, p. 726). Patterns of maternal behavior were also found to be related to child performance on a battery of cognitive tests. However, no further information was given describing these patterns of behavior.

The second study in this group was conducted in England by Wood and Middleton (1975). Twelve three-year-old children and their mothers were observed building a pyramid from 21 blocks containing pegs and holes. The mothers were instructed to assist the child in any way they wished. After they had instructed the child, the mother was asked to dismantle the pyramid and ask the child to reconstruct it on his own.

Five measures were analyzed from the videotapes, three maternal instructional measures and two child-post instructional behaviors. The maternal measures included: (1) Level of intervention, - five levels were defined ranging from general verbal instruction to demonstrating an operation; (2) Activity in the region of sensitivity to instruction, - for each level of intervention the proportion leading to success on the child's part was calculated with the region of sensitivity defined as that level at which the child failed to follow the most helpful instructions; and (3) Sensitivity of the mother to feedback from the child's activities, - the level of intervention used following each success and failure of the child was noted, and the combined total of success followed by less help and failure followed by more help was considered as a proportion of all interventions. The two child measures were probability of a task appropriate construction and probability of an error rejection.

The results indicated that: "Those mothers who systematically changed their instructions on the basis of the child's response to earlier interventions were most likely to see their child perform effectively after instruction. They were also the most likely to determine and concentrate upon the child's 'region of sensitivity to instruction' - a hypothetical measure of the child's current task ability and his readiness for different types of instruction," (p. 181).

The authors view effective instruction as a dynamic, problem-solving activity on the part of the teacher (mother). The teacher must be alert to the learner's behavior following each instruction or suggestion and then decide on his/her next instruction based on the learner's performance. This close examination of the transactional process occuring during parent-child instructional interaction is a welcome addition to the research studies in the area.

Book Reading

Two event sampling studies which utilize book reading as the parent-child activity are included in this review; the first is a discriptive study relating parent teaching behaviors to child reading performance while the second is an evaluative study of a home-visit program.

Flood (Note 8) observed parent-child reading behavior in 36 mother-child dyads. Although four ethnic groups and three SES levels were represented in the sample, the major data analysis was done using the total sample. Ten prereading tasks were administered to each 3 1/2 - 4 1/2 year old child and a single prereading score was obtained using factor analysis. Fourteen different behaviors, 9 maternal and 5 child, were tallied during the book-reading situation. See Table 8 for a list of these 14 behaviors.

Insert Table 8 about here

Data analysis indicated that a combination of four of the behaviors significantly predicted the child's prereading score. These four were: warm-up questions asked by the mother, positive reinforcement, number of words spoken by the child and post-evaluative questions asked by the parent.

The second study using book-reading as the activity was conducted by Olmsted and Ware (Note 9). The teaching behaviors of two groups of parents, a group which had participated in the Florida Parent Education Program and a group which had not participated in the program was assessed in two program sites. In each site, 22 low-income parent-child dyads participating in the program and 22 low-income parent-child dyads who had never been involved in a home visitation program were videotaped reading a book together. Frequency counts of specific parental teaching behaviors stressed by the program were made. A list of these ten teaching behaviors is given in Table 9. Significant

parent education program effects and significant site effects were both found.

Insert Table 9 about here

Further data analysis indicated that the same four parental teaching behaviors were contributing to both the significant difference found between sites and that found between program and non-program parents. These four behaviors were: asking questions which have more than one correct answer, asking questions which require more than one word as an answer, encouraging the child to enlarge upon his response, and, giving the learner time to think about the problem.

Etch-A-Sketch

The etch-a-sketch task originally used by Hess et al has been used to investigate parent-child verbal and nonverbal communication in two socio-economic groups (Hore, 1970; Schmidt & Hore, 1970). The authors hypothesized a negative relationship between verbal and nonverbal channels of communication and used parent-child dyads from high and low SES groups to provide a contrast in the quality of verbal communication. Fifteen dyads from each SES group in Edmonton, Canada were randomly selected from the total sample of five-year-olds in the city. The children in the two groups did not differ in IQ score as measured by the PPVT. Two tasks were used, the etch-a-sketch and telling stories back and forth using pictures. Thus, one task was manipulative while the other more verbal. Significant differences were found in the complexity of language used by parents from the two SES groups on both tasks, as expected. On each task the high SES parents used more complex language. Three nonverbal variables were studied, physical contact, body inclination and mutual glances with the results differing

for each one. There was no difference between the groups on body inclination, low SES dyads exhibited more physical contact, and high SES dyads had a significantly higher number of mutual glances. One thing I feel this study shows is that we are still in the beginning stages in studying some aspects of parent-child interaction. It would seem that there are many functions of nonverbal communication which may be used, e.g., reinforcing, controlling, guiding, etc. An analysis of the Hore & Schmidt data in terms of not only the type but also the function of the nonverbal communication may yield more meaningful results. It is true that this type of observation involves more difficult decisions (is a higher-inference-system), but it may be necessary to operate at this level.

Picture Selection

Bernhardt & Forehand (1975) investigated the use and effectiveness of labeled and unlabeled praise, with labeled praise defined as pointing out an aspect of behavior in addition to a general favorable comment and unlabeled praise being only the favorable comment. Twenty lower-class and 20 middle-class white mothers with their five-year-old children constituted the sample. During an initial 10 minute unstructured observation period, the frequency of the mother's use of labeled and unlabeled praise was recorded. No significant differences were found in the frequency of use of each kind of praise between the two groups of mothers. The middle portion of the session consisted of the child choosing the picture he liked best from each of forty sets of two pictures, with the mother praising his selection. Again no significant differences were found. The final situation utilized a marble-in-the-hole game and bug-in-the-ear appraratus. Through the apparatus, 50% of the mothers in each group were given labeled praise statements and 50% were given unlabeled praise statements to use when their

child dropped a marble in the child's less preferred hole. The results indicated that labeled praise statements were more effective in changing the child's behavior than unlabeled praise. These results can be related to those of Hess et al, Brophy, and Olmsted who also found that specificity was an important dimension of teaching behavior. However, these previous studies focused mainly on preresponse teaching behaviors, and Bernhardt et al. state "The finding that labeled praise was more effective in producing 'correct' behavior than unlabeled praise suggests that post-response labeling of behavior is also important in producing behavior change," (p. 542).

Beanbag Toss

The study to be described in this section as well as the one to be described in the next section have focused on the instructional behaviors of Mexican and Caucasian American mothers. In this study (Madsen & Kagan, 1973) the sample consisted of 24 Mexican mother-child pairs and 24 Caucasion American mother-child pairs. The children in both groups were between six and nine years old. Instructions were given in the native language. There were two structured situations, with half of each ethnic group participating in each setting. In the first task the child tossed a beanbag ten times at squares arranged in a line going away from him/her. Whenever a child succeeded in hitting a square, on the next throw he aimed for the next further square in the row. The mothers were given ten marbles and were told they could give their child as many or as few as they wished after each throw. Both groups of mothers rewarded their children for successes. However, Mexican mothers gave significantly more rewards for failures than did the American mothers. In the second situation the remaining families from the two samples served as subjects. The setting was similar to the first situation and this time the mother selected which square the child was to aim for. Also, in this study the nearest square was rewarded by one marble, the next nearest by two marbles, etc. The results indicated that the

American mothers chose significantly more difficult targets and that following failures the American mothe significantly more often maintained the same target rather than moving to an easier one as did the Mexican mothers.

The results just presented have to be considered in light of the following. The Mexican sample was drawn from a Baja peninsula community in which nearly all of the families live just above the subsistence level. The American sample consisted of families from Los Angeles in which the mother was also employed and the children were enrolled in day care centers in which payment was on a sliding scale. Not enough information was presented about the American sample concerning its homogeneity regarding social class. The American sample may have been more diverse and may have been composed of both lower-class and middle-class families. If this were the case, then the findings may be attributed not only to ethnic differences, but also social class differences. If more information regarding the sample had been given or if techniques used by Bee and her associates to 'control' for one variable while examining the effects of another had been used here, one could place more confidencein the findings. Also, it is important to consider the "relevance" of the tasks to the two samples. Did the task have the same "meaning" for the two groups of mothers?

Pushing-A-Counter

The study utilizing this activity has been included in this review because it seems to uniquely combine an experimental setting with the study of parental reinforcement behaviors (Kagan and Ender, 1975). By controlling the setting the investigators were able to insure that each child both succeeded and failed on some trials. Thus, they were able to observe the maternal responses to both success and failure.

Three ethnic groups were compared, Mexican, Mexican-Caucasian American and Caucasian Anglo-American. The 16 Mexican families were randomly chosen

from the same Baja peninsula community as in the previous study. The 16 families for each of the other two groups were "randomly chosen from families at a boating and picnicking area at Fairmount Park" (Riverside, CA) (p. 455). Information regarding average earnings was obtained for the two American samples and used in portions of the analysis. The two samples were found to be similar in average earnings to their respective populations in that city. (The ages of the children were not reported, but judging from the task used, they fell in the range being considered in this paper.)

The maximum number of times the child could push a tally counter in ten seconds was determined over three trials. This number then became the child's goal during the subsequent ten trials. The ten task trial times used were 15, 14, 13, 12, 11, 9, 8, 7, 6 and 5 seconds which, because the rate of tally counter pushing is very consistent, insured five successes and five failures. Half of the children began with five failures followed by five successes and the other half received the reverse order. The mother was given fifty chips and after each trial was allowed to give up to five chips, take away up to five chips or do nothing. The number of chips the child had at the end of the ten trials determined how many toys he received.

The results indicated that the two groups of American mothers reacted contingently based on the child's success or failure, that is, these two groups of mothers gave significantly more chips for successes than for failures. The Mexican mothers reacted similarly regardless of the child's performance. The behavior of the Mexican mothers differed significantly from the two American groups which did not differ from each other. For the Mexican children it didn't matter whether they succeeded or failed, they received approximately the same number of chips. For the two American groups of children success resulted in nearly twice as many chips

as failure. This type of experience may lead the Mexican child to feel that he has little control over rewards - that it makes little difference whether he succeeds or fails. For the American children it "paid" to succeed as they then received approximately twice as many tokens.

Discussion

Now that each of the 25 studies has been presented, an overall picture of the findings will be given. First, the relationships between parental teaching behaviors and variables such as social class, ethnic group and sex of the child will be briefly summarized. The remainder of the section will be devoted to examining the composite picture of the relationship between parental teaching behaviors and child outcomes.

Of the 25 studies in this review, 13 investigated the relationship between social class and parental teaching style. Of these 13, 9 found a significant relationship, 2 found no significant relationship and 2 reported mixed findings. All three types of observation procedures were represented in these 13 studies and there seems to be little evidence to suggest that the different procedures resulted in different results. Most of the studies either restricted their samples to one ethnic group, or statistically controlled for ethnic group while examining social class and parental teaching behavior.

Ten of the 25 studies looked at the relationship between ethnic group and parental teaching strategies. Of these 10 studies, 6 reported a significant relationship while the remaining 4 did not find a significant relationship. No consistent pattern is evident across the 10 studies; various combinations of ethnic groups served as subjects in the studies with comparisons between the same set of groups sometimes being significant and sometimes being nonsignificant. At this point it is unclear whether or not a significant relationship exists between ethnic

group and parental teaching style.

Sex of the child and parental teaching behavior was examined in 13 of the 25 studies. Nine of these 13 studies report a nonsignificant relationship between the two variables with 2 other studies reported mixed results. These results suggest, at least for the studies in this review, a nonsignificant relationship between parental teaching behavior and sex of the child.

The results of studies examining the relationship between parental style and child behavior are presented in Table 10. This is a very difficult

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Insert Table 10 about here

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table to interpret for several reasons. First, various investigators looked at parental teaching behaviors which may have been similar, but not identical. For example, Hess et al have a variable called Praise and Engagement which includes positive feedback plus other behaviors. To make the table readable, these sets of similar behaviors have been grouped into one category even though they may not have been defined identically. Second, some behaviors fall into more than one of the subsets developed for the table. That is, warm-up questions are both requests for verbal behavior and one aspect of orientation.

Two other major issues complicate the interpretation of the table. First, a variety of child measures have been used in the different studies included in this review. It was impossible to include these diverse measures in the table and still have an interpretable end-product. The separate child measures are presented under each study and the reader should refer back to earlier sections of the paper for more detailed information. Second, the studies used different ethnic groups, socio-economic groups, etc., and these variables have been collapsed for Table 10. In addition, some

studies had rather small sample sizes. For the reasons presented in the last two paragraphs, Table 10 is mainly useful for obtaining a gross overview of the findings in the area.

A total of 12 studies examined the relationship between parental teaching behaviors and child measures. In one study, Bee et al, the particular parental behaviors which were related to child performance were not specified so that study could not be included in the table. The 11 studies which are included are Hess et al, (and Brophy), Santin & Garber, Wiegerink, Wiegerink and Weikart, Sandler et al, Wood & Middleton, Bernhardt & Forehand, Flood, and the three Feshbach studies. Any parental teaching behavior could have been included in as many as 11 studies. Examination of Table 10 shows that only 2 parental behaviors have been observed in more than 3 studies. Eighteen parental behaviors were examined in only one study, 6 behaviors in 2 studies and 3 behaviors in 3 studies. Only parental teaching behaviors which were found to be significantly related to child measures in at least one study were included in Table 10, so there is still a large number of parental behaviors which have been observed but are not included due to the fact that only nonsignificant relationships were found. These parental behaviors are listed throughout the paper, but not listed in Table 10.

Rather than presenting a complete picture, Table 10 lists parental teaching behaviors which have been found to be significantly related to child behavior in at least one study. The total number of studies which examined each parental teaching variable is presented, along with a breakdown of the findings of the various studies. The most clear-cut findings are those for positive and negative feedback. One of the reasons for this is that these behaviors have been observed in many studies. Interpretations

for the remaining parental teaching behaviors is limited due to the small number of replications (if any).

There is sufficient evidence available to support the existence of a relationship between parental teaching behaviors and child behavior. The problem arises when one tries to specify which particular parental teaching behaviors are related to which particular child measures. Hopefully, this specification of behaviors (with the needed replications) will be one of the major directions of research in this area in the next few years. Other questions which need to be explored concern the stability and variability of parental teaching behavior. Does the same parent teach two tasks to the same child in the same way? Are some parents more variable in their teaching behavior and is this variability related to child measures?

This field of research is important because it provides information about the parent as a teacher. In an era when this parental role is seen as being more and more significant, there is a definite need for data to guide us as we carry out home-school programs and parent education programs. May the next ten years be even more productive in this area of research than the last ten have been.

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Table 1

Activities and Observation Techniques

Activity	Observation Technique: Event Sampling	Event Unit	Time Unit
Sorting Task	[Hess et al]* [Hess et al Brophy] Olmsted & Jester Santin & Garber	Wiegerink & Weikart Wiegerink Falender & Heber	Steward & Steward Steward & Steward
Puzzle Construction	Feshbach Feshbach Feshbach		[Osofsky & O'Connell Osofsky & Oldfield]
Maternal Teaching Style Instrument (MTSI)	Barbrack Sandler et al Sandler et al Sandler et al Benson & Sandler		
Building Tasks		[Bee et al Bee et al Wood & Middleton]	
Book Reading	Flood Olmsted & Ware		
Etch-A-Sketch	[Schmidt & Hore Hore]		
Picture Selection	Bernhardt & Forehand		
Beanbag Toss	Madsen & Kagan		
Pushing A Counter	Kagan & Ender		

*Sources enclosed within brackets are multiple examinations of the same set of data and are counted as 1 study

Table 2

Number of significant correlations between maternal teaching variables and child variables.*

Maternal Teaching Variables	Child Variables	
	Process (n=10)	Product (n=4)
Orientation	5**	4
Requesting block placement	7	4
Requesting labels	5	1
Specific instructions	5	4
Specific feedback	7	4
General verbal specificity	5	3
Affirmation/negation	3	3
Praise and encouragement	3	4
Coercive control	5	3
Attention demand	6	2
Response quality demand	5	2
Affectionateness	1	3

* Adapted from Hess, Shipman, Brophy and Bear (Note 2)

** 5 of the 10 correlations were significant at $\alpha = .05$

Table 3

Significant correlations between maternal teaching variables and later child academic performance*

	Child Academic Performance		
	Grades		
Maternal Teaching Behaviors	Reading	Arithmetic	Reading Achievement Test
No. of models M shows C (ES)**	+***	+	+
No. of specific turning directions (ES)	+	+	+
Orientation (BS)	+	+	+
Praise and engagement (BS)	+	+	+
Specificity of feedback (BS)	+	+	+
Requests for block placement (BS)	-	-	-
Warmth (BS)			
Affectionateness (ES & BS)	+	+	+

* Adapted from Hess, Shipman, Brophy & Bear (Note 3)

** ES = etch-a-sketch task, BS = block-sorting task

*** + indicated a significant positive correlation ($\alpha = .05$)

- indicated a significant negative correlation ($\alpha = .05$)

Table 4

Significant correlations between maternal teaching variables and child variables*

	Child Variables			
	IQ		Eight Block Test	
Maternal Teaching Variables	Binet	PPVT	Verbal	Performance
Specific information	-**	-		
General information	+	+		
Positive feedback	+	+	+	+
Negative feedback	-	-	-	
Verbal requests				
Performance commands	-	-	-	-
Expansiveness	+	+	+	+

*Table adapted from Wiegerink, 1969

** - indicates a significant nagative correlation (α=.05)
+ indicates a significant positive correlation (α=.05)

Table 5

Maternal Teaching Variables*

I. Programmatic variables
   - A. Total time
   - B. Input
   - C. Pacing

II. Loop variables
   - A. Format content
     1. Original
     2. Embroidery
   - B. Format strategy
     1. Verbal
     2. Nonverbal
     3. Combined
     4. Questions
     5. Statements
   - C. Format specificity
     1. Level 1 (low)
     2. Level 2
     3. Level 3
     4. Weighted
   - D. Feedback
     1. Positive
     2. Negative
     3. Information

*Adapted from Steward & Steward, 1973

Table 6

Mean Frequencies of Reinforcements Administered by American, Israeli and English Mothers*

Culture	MC White	MC Black	LC White	LC Black
Positive Reinforcement				
American	6.4	4.6	4.7	4.7
Israeli	6.7		4.3	
English	4.4		3.0	
Negative Reinforcement				
American	1.4	1.8	2.2	5.4
Israeli	2.9		3.8	
English	1.5		2.0	

*From Feshbach, 1973

Table 7

Original and Revised MTSI

Maternal Teaching Categories

A. Nonverbal behavior*
   1. Direction
   2. Positive feedback
   3. Negative feedback
   4. Total

B. Verbal behavior
   1. Cue label
   2. Positive feedback
   3. Negative feedback
   4. Direction
   5. Question
   6. Information
   7. Total

C. Combined verbal and nonverbal
   1. Positive feedback
   2. Negative feedback
   3. Direction
   4. Total

A. Nonverbal behavior**
   1. Gesture
   2. Physical contact

B. Verbal behavior
   1. Cue label
      a. Color
      b. Shape
      c. Size
      d. Position
   2. Positive feedback
      a. Child-oriented
      b. Task-oriented
   3. Negative feedback
      a. Child-oriented
      b. Task-oriented
   4. Direction
      a. Appropriate
      b. Inappropriate
   5. Question
      a. Appropriate
      b. Inappropriate
   6. Information
      a. Appropriate
      b. Inappropriate

*Adapted from Barbrack, Note 4.

**Adapted from Sandler et al., Note 6.

Table 8

Parent and Child coding categories for a book-reading situation.*

Parent Behaviors

- Number of warm-up questions asked
- Number of words spoken
- Number of non-task related remarks
- Number of factual questions asked
- Number of interpretive questions asked
- Number of elaborations of child answers
- Number of positive reinforcements
- Number of corrections
- Number of post-evaluative questions asked

Child Behaviors

- Number of words spoken
- Number of non-task related remarks
- Number of questions asked
- Number of questions answered
- Number of times story related to other experiences

*Adapted from Flood, Note 8.

Table 9

Florida Parent Education Program

Desirable Teaching Behaviors*

1. Get the learner to ask questions.
2. Ask questions that have more than one correct answer.
3. Ask questions that require more than one word as an answer.
4. Encourage the learner to enlarge upon his answers.
5. Praise the learner when he does well or takes small steps in the right direction.
6. Let the learner know when his answer or work is wrong, but do so in a positive or neutral way.
7. Get the learner to make judgements on the basis of evidence rather than by guessing.
8. During the activity give the learner time to think about the problem, don't be too quick to help.
9. Before starting the activity, give the learner time to familiarize himself with the task materials.
10. Before starting the activity, explain what you are going to do.

*Adapted from Olmsted & Ware, Note 9.

Table 10

Summary of Results Between Specific

Parental Teaching Behaviors and Child Measures

Parental Teaching Behavior	Total Number of Studies	Significant Findings		Mixed Results	Nonsignificant Results
		Positive	Negative		
Feedback					
Positive feedback	9	6	-	2	1
Negative feedback	7	-	4	2	1
Specific feedback	3	2	-	-	1
Sensitive to feedback	1	1	-	-	-
Requests for Verbal Behavior					
Open questions	3	2	-	-	1
Closed questions	2		-	-	1
Warm-up questions	1	1	-	-	-
Post-evaluative questions	1	1	-	-	-
Requests labels	1	1	-	-	-
Orientation					
Orientation	2	2	-	-	-
Detail of introduction	1	1	-	-	-
Nonverbal behavior					
Gestures	1	1	-	-	-
Physical contact	1	-	1	-	-
Requests for nonverbal behavior	2	-	2	-	-
Giving information	3	1	1	1	-
Specific instructions	2	2	-	-	-
Negative control	2	-	1	-	1
No. of words spoken by child	2	1	-	-	1
Miscellaneous-Unique					
General verbal specificity	1	1	-	-	-
Affirmation/negation	1	1	-	-	-
Attention demand	1	1	-	-	-
Response quality demand	1	1	-	-	-
Affectionateness	1	-	-	1	-
No. of models M shows C	1	1	-	-	-
No. of specific turning directions	1	1	-	-	-
Nondirective teaching strategies	1	1	-	-	-
Expansiveness	1	1	-	-	-
Level of intervention	1	1	-	-	-
Act in 'Region of Sensitivity'	1	1	-	-	-